INTEGRATED CIRCUIT MEMORY DEVICES

Related Application

This application is a divisional of U.S. Application Serial No. 10/100,719, now Patent No. 6,709,915 filed March 19, 2002, which claims priority from Korean Patent Application No. 2001-30772, filed on June 1, 2001, the contents of each of which are herein incorporated by reference in their entirety.

Field of the Invention

The present invention relates to an integrated circuit memory device and a method of fabricating the same, and more particularly, to an integrated circuit memory device which is capable of enhancing the capacitance of a capacitor without increasing the height of the capacitor and a method of fabricating the same.

Background of the Invention

As the integration density of integrated circuit devices, increases, the area occupied by a unit cell continues to decrease. Since the driving capability of integrated circuit devices, such as dynamic random access memories (DRAM), is strongly dependent on the capacitance of a capacitor, a variety of attempts for increasing the capacitance of a capacitor have been carried out, irrespective of the decrease of the area occupied by the capacitor. Accordingly, in order to increase the capacitance of a capacitor by increasing the effective area of the capacitor, capacitors have been formed to have a three-dimensional structure, such as a concave shape, a cylinder shape, a fin shape, or a box shape.

Hereinafter, a method of fabricating a conventional integrated circuit memory device including a concave-shaped storage node electrode will be described with reference to FIGS. 1A through 1C. In FIGS. 1A through 1C, the drawings indicated by "X direction" are cross-sectional views of a semiconductor substrate taken along a direction parallel to word lines, and the drawings indicated by "Y direction" are cross-sectional views of a semiconductor substrate taken along a direction parallel to bit lines.

Referring to FIG. 1A, word line structures 15 are formed on a semiconductor substrate 10, on which an isolation layer 11 is formed, by a well-known method.